



PERGAMON

Telecommunications Policy 24 (2000) 155–159

TELECOMMUNICATIONS
POLICY

www.elsevier.com/locate/telpol

Current Statistics

Telecom traffic indicators

Tim Kelly^{*,1}, Mark Woodall

International Telecommunication Union (ITU) Place des Nations, 1121-20, Geneva, Switzerland

For an economist, indicators of international telecommunications traffic are highly meaningful. After all, “traffic” is the single most important output from the telecommunications sector and the direction of traffic flows reveal much about patterns of commercial and social interaction between countries. However, it is likely that, in the future, traffic statistics reported by public telecommunications operators will carry less weight. That is because an increasing share of traffic is not being reported. There are a number of reasons for this:

- because voice and fax traffic is passing over networks other than the public switched telephone network; notably over the Internet, leased lines or frame-relay networks;
- because an increasing share of the market is held by smaller carriers and resellers that are not obliged to report traffic to regulators; and
- because an increasing share of traffic is not passing through the traditional accounting rate system but operates under other regimes. For instance, traffic might be carried to the destination country over circuits wholly-owned by one carrier, and then delivered into the network of a terminating carrier at the local level, requiring only the payment of an interconnect fee, not a settlement payment.

Historically, international traffic statistics have provided economists and other analysts with a rich source of information concerning the operation of the global economy.² Traffic statistics were collected and reported on a bilateral basis because of the requirements of the accounting rate system. As the accounting rate system is progressively being superseded by a regime based on cross-border interconnect, traffic statistics will become harder to collect and less reliable.

A good example of this problem is provided by the latest traffic statistics, for 1998. For the world as a whole, the total reported output of traffic amounts to around 93 billion minutes. The US accounts for some 26% of that total but, for the first time in many years, the US share fell during

* Corresponding author.

E-mail addresses: tim.kelly@itu.int (T. Kelly), mark.woodall@itu.int (M. Woodall)

¹ The views expressed in this article are those of the authors and do not necessarily reflect the opinions of the ITU or its membership.

² See, for instance, the analysis in ITU/TeleGeography Inc., “Direction of Traffic 1999: Trading Telecom Minutes”, available for purchase at <http://www.itu.int/ti>.

Table 1

Top ten net settlement deficit countries. As measured by estimated net settlements to rest of world, in US\$ million, 1998^a

Country	Outgoing traffic 1998, million minutes	Incoming traffic 1998, million minutes	Imbalance (outgoing minus incoming)	Imbalance as % of total traffic	US settlement rate, 1998 (US cents per minute)	Estimated net settlement, 1998 (US\$m)
United States	24300.3	7146.0	17154.3	54.6	26.0	– 5309.5
Canada [97]	4286.0	4635.0	– 349.0	– 3.9	10.0	– 2333.1
UAE	874.8	280.0	594.8	51.5	100.0	– 1211.0
Saudi Arabia	932.6	445.0	487.6	35.4	103.5	– 500
United Kingdom	8225.0	6400.0	1825.0	12.5	7.0	– 235.0
Switzerland	1901.0	1779.0	122.0	3.3	14.0	– 190.0
Qatar	119.2	71.5	47.6	25.0	100.0	– 115.7
Israel	661.0	424.0	237.0	21.8	29.5	– 70
Singapore	1235.0	1090.0	145.0	6.2	26.0	– 40
Austria	1250.0	1011.0	239.0	10.6	0.0	– 30

^aNotes: Figures shown in italics are estimates. All other figures are as reported by the countries concerned. The figures quoted for the US are based on preliminary Section 43.61 filings and are subject to revision. The US net settlement takes account of transit traffic.

The methodology used for estimation of the net settlement is as follows: Where the country reports this indicator, it is calculated as incoming payments minus outgoing payments; where the country does not report this indicator, it is estimated by multiplying the traffic imbalance for each country by its settlement rate with the US during 1998. For the US, the settlement rate is the traffic-weighted average settlement rate to all other destinations. For all other countries, it is the average settlement rate to the US. For Canada, 1998 data is not yet available, so data for 1997 is shown.

Source: ITU/TeleGeography Inc. “Direction of Traffic Database”, FCC.

the year. US outgoing international traffic rose by only 8% during 1998 compared with a historical growth rate of over 20% per year since the mid-1980s. Given that the US economy was experiencing an economic boom in 1998, it is hard to credit this slow down in growth. The explanation would seem to be that the missing traffic is simply not being measured.

Despite the slower growth, the US is still the major exporter of traffic to the rest of the world with an excess of outgoing over incoming traffic of over 15 billion minutes in 1998. In consequence, US operators must make payments to operators in other countries for termination of traffic, under the accounting rate system. These net settlements have become a *cause célèbre* in US politics in recent years and are one of the main factors behind the FCC Benchmark Order. The growth in the amount of the US net settlement has stabilised since 1996, but still amounts to over US\$ 5 billion (Table 1). The main beneficiaries of the settlement are in Latin America and the Caribbean and in Asia (Fig. 1).

But the US is not alone in making net settlement payments to other countries. In total, more than 30 other countries, as diverse as Switzerland and Swaziland, are obliged to make net compensation payments to their traffic partners. The reasons why a country might be in this position are varied:

- In some cases, such as Angola, Botswana, Lesotho, Namibia and Swaziland, they are the victims of traffic refile from partners in sender-keeps-all arrangements. In this particular case, it is

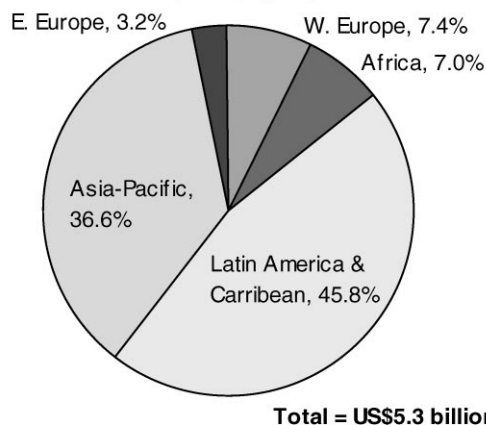
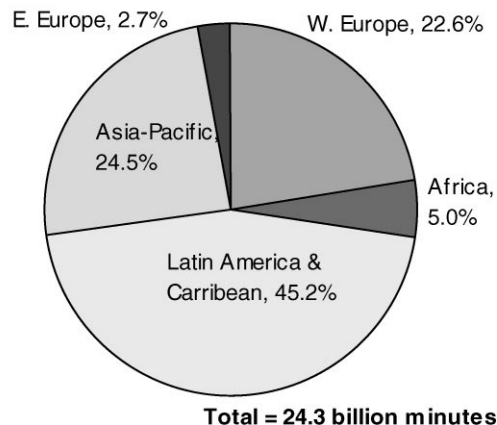
US net settlement, 1998, by region**US outgoing traffic, 1998, by region**

Fig. 1. Distribution of US net settlements and outgoing traffic, by region, 1998.

Based on preliminary section 43-61 filings, subject to reversion.

Source: ITU/TeleGeography Inc, "Direction of Traffic Database", FCC

South Africa which refiles incoming international traffic to exploit favourable cross-border arrangements.

- In other cases, such as the Gulf States and Saudi Arabia, traffic imbalance can be explained by the fact that the country is home to many migrant workers who telephone home.
- In cases such as Sweden, Switzerland or Japan, it is likely to be the relative wealth of the country's subscribers which make them net senders of traffic.
- In certain cases, such as Canada, the country receives more traffic than it sends out, nevertheless as it has lower settlement rates with traffic deficit countries than with traffic surplus ones, its operators must make net settlements, on balance.

As Table 1 shows, the major countries which make net settlements are predominantly high-income economies. Added together, they have a net deficit of over US\$ 10 billion in 1998 of which the US makes up just under half.

By contrast, the top ten net settlement surplus countries are all developing economies, or economies in transition such as Poland. Added together, the top net surplus countries gained some US\$ 3.5 billion during 1998, a figure which was considerably down on previous years. If one considers only bilateral relations between developed and developing countries, then the figure is higher, around US\$ 5 billion, though in the mid 1990s it reached more than US\$7 billion. In the period since 1993, when the disparities in the direction of traffic first began to grow, a minimum of US\$ 40 billion has been directed towards developing countries via the mechanism of the accounting rate system. No other net flow of telecommunications funds towards developing countries, apart from perhaps privatisation receipts which have generally not been used for telecommunication purposes, comes even near to matching this level.

The settlement rate negotiated between US operators and their correspondents in other countries is declining at an accelerating rate. Between 1992 and 1996 it fell on average by 8% per year,

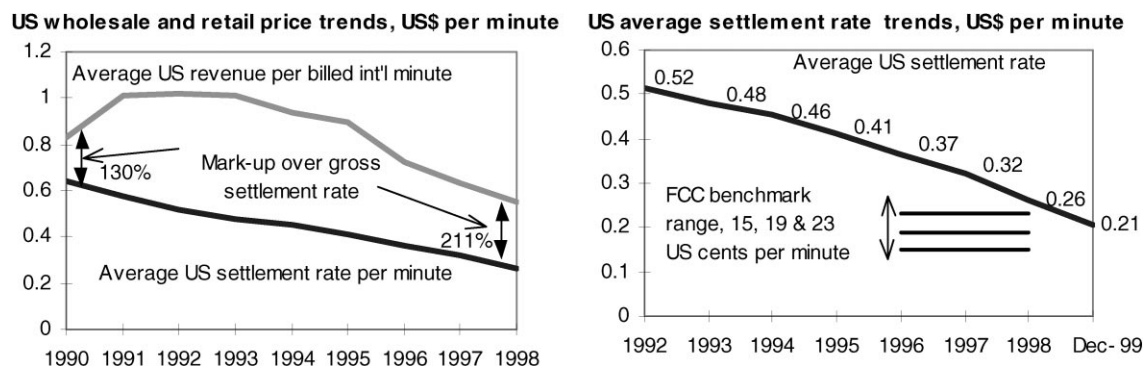


Fig. 2. Trends in US average settlement rate and retail tariff. In US\$ per minute.

Note: The “average US settlement rate” is an end-of-year average based on the settlement rate to each call destination weighted by the number of minutes of traffic to that destination. For 1999, the figure for December 1 is taken. The “average US revenue per billed international minute” is calculated by dividing the total US retail revenue by the total number of billed international minutes of outgoing traffic during the same year.

Source: ITU, adapted from FCC preliminary section 43.61 filings.

Table 2

Top ten net settlement surplus countries. As measured by estimated net settlements from the rest of world, in US\$ million, 1998.^a

Country	Outgoing traffic 1998, million minutes	Incoming traffic 1998, million minutes	Imbalance (outgoing minus incoming)	Imbalance as % of total traffic	US settlement rate, 1998 (US cents per minute)	Estimated net settlement, 1998 (US\$m)
India	436.2	1498.8	– 1062.6	– 54.9	64.0	<i>680</i>
Mexico	1307.6	3060.5	– 1752.9	– 40.1	35.0	<i>620</i>
Philippines	286.4	681.2	– 394.7	– 40.8	36.5	<i>505.0</i>
China	1711.5	2400.0	– 688.5	– 16.7	70.0	<i>480</i>
Pakistan	87.5	640.4	– 552.9	– 76.0	60.0	<i>330</i>
Viet Nam	56.0	334.0	– 278.0	– 71.3	55.0	<i>240</i>
Lebanon	70.0	300.0	– 230.0	– 62.2	85.0	<i>201.3</i>
Egypt	127.3	475.3	– 348.0	– 57.8	87.5	<i>150</i>
Poland	602.4	1144.4	– 542.0	– 31.0	65.0	<i>145</i>
Dominican Rep.	157.5	730.5	– 573.0	– 64.5	10.5	<i>130</i>

^aNotes: Figures shown in italics are estimates. All other figures are as reported by the countries concerned. The methodology used for estimation of net settlement is as follows: Where the country reports this indicator, it is calculated as incoming payments minus outgoing payments; where the country does not report this indicator, it is estimated by multiplying the traffic imbalance of each country by its settlement rate to the United States during 1998.

Source: ITU/TeleGeography Inc. “Direction of Traffic Database”, FCC.

but since 1996 it has been falling by 17% and, in the first 11 months of 1999, it fell by 21% to just 20.5 US cents per minute (Fig. 2). Indeed, the settlement rate is now falling at a much faster rate than the retail rate, suggesting that political persuasion is working more effectively than the competitive market. This is a measure of the pressure being exerted by the US on its partner

countries, particularly those with large net settlement surpluses (see Table 2). The combination of lower settlement rates, slower growth in US outgoing traffic and an increasing share of traffic passing outside the accounting rate system suggests that the financial transfers between rich and poor countries which have been a feature of the 1990s may not be carried through into the new century.